FIG. 1

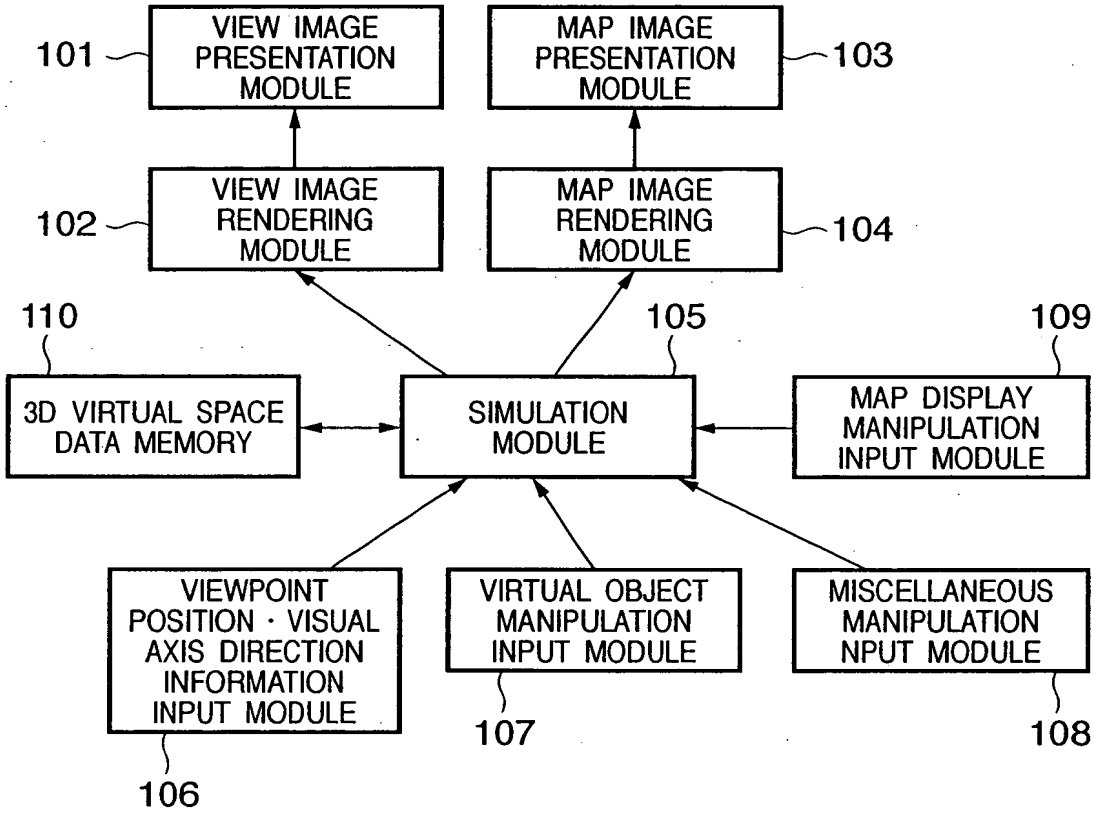

101
VIEW IMAGE PRESENTATION MODULE
MAP IMAGE PRESENTATION MODULE
103
102
VIEW IMAGE RENDERING MODULE
MAP IMAGE RENDERING MODULE
104
110
105
109
3D VIRTUAL SPACE DATA MEMORY
SIMULATION MODULE
MAP DISPLAY MANIPULATION INPUT MODULE
VIEWPOINT POSITION · VISUAL AXIS DIRECTION INFORMATION INPUT MODULE
VIRTUAL OBJECT MANIPULATION INPUT MODULE
MISCELLANEOUS MANIPULATION NPUT MODULE
106
107
108

FIG. 2

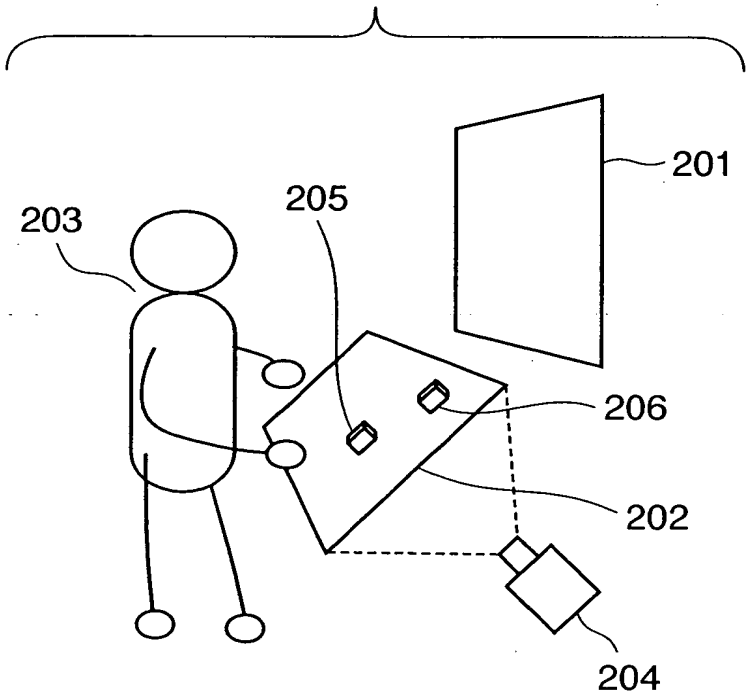


FIG. 3

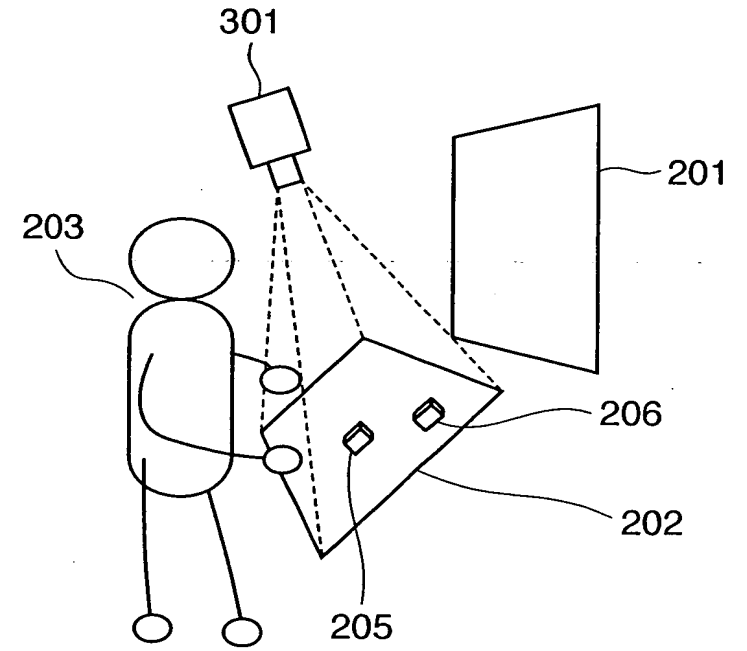


FIG. 4

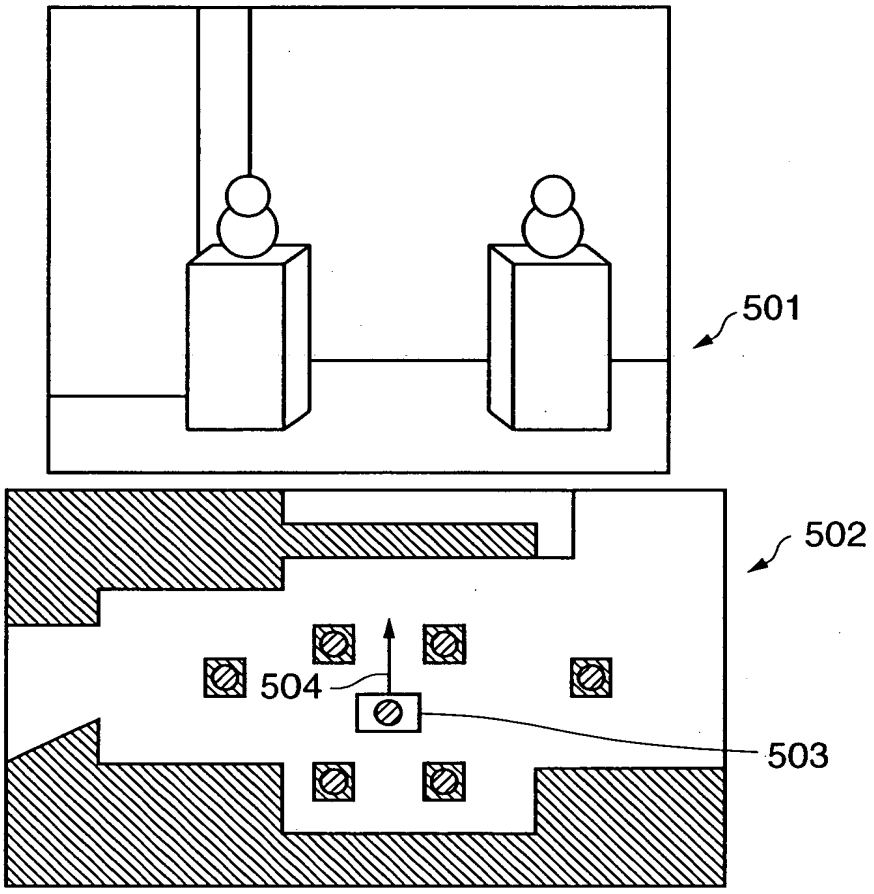


FIG. 5

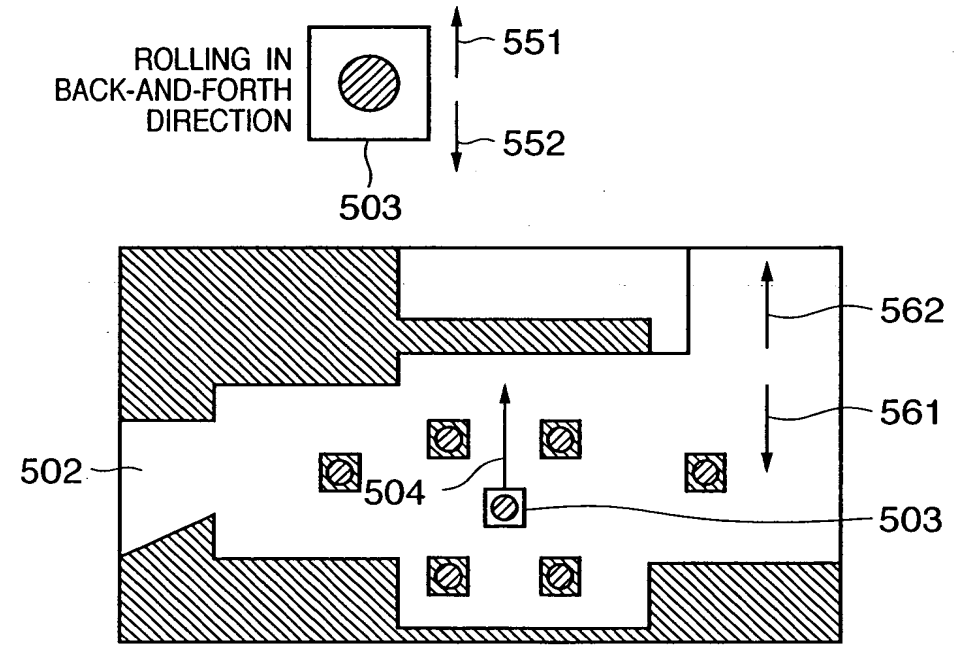

ROLLING IN
BACK-AND-FORTH
DIRECTION
551
552
503
562
561
502
504
503

FIG. 6

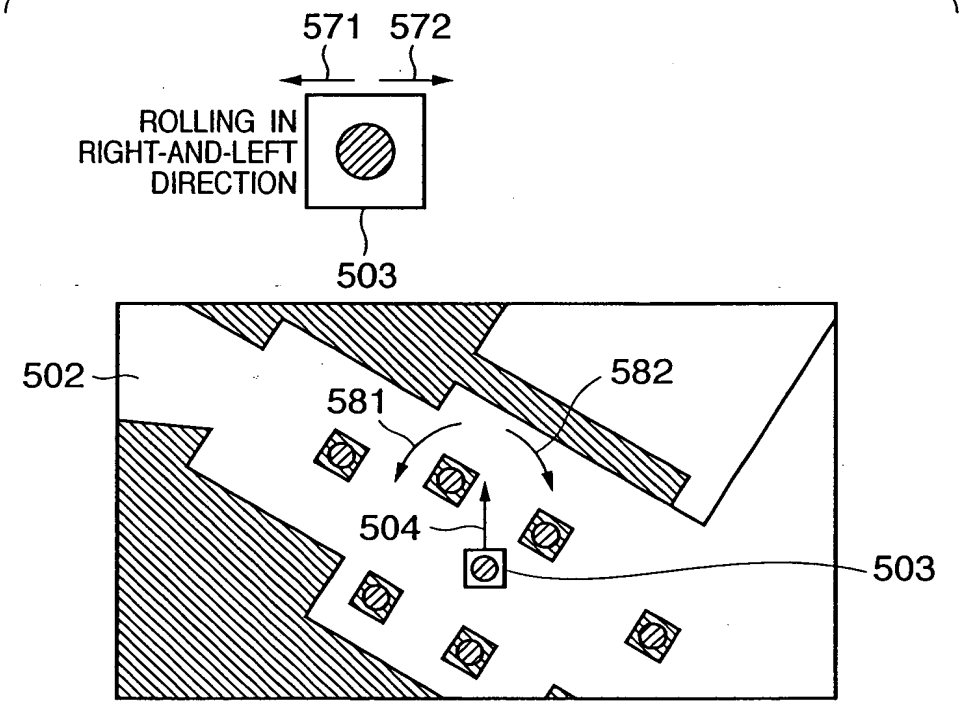

571
572
ROLLING IN
RIGHT-AND-LEFT
DIRECTION
503
502
582
581
504
503

FIG. 7

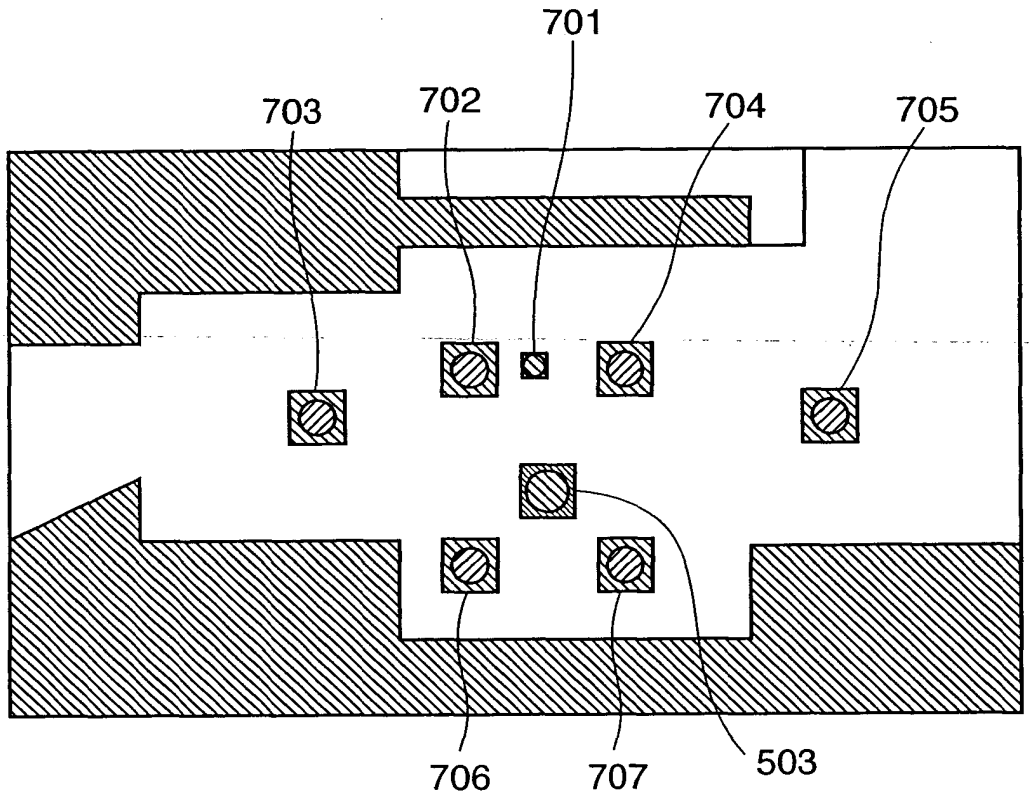


FIG. 8

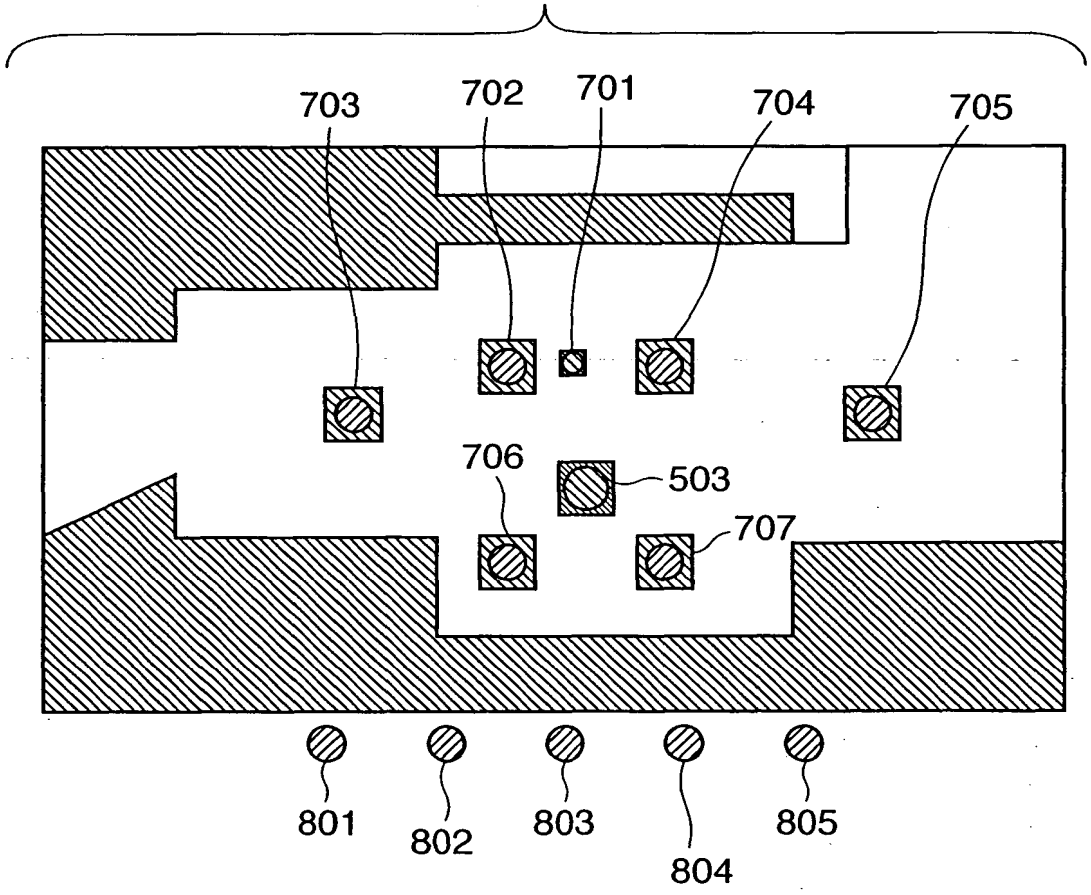


FIG. 9A

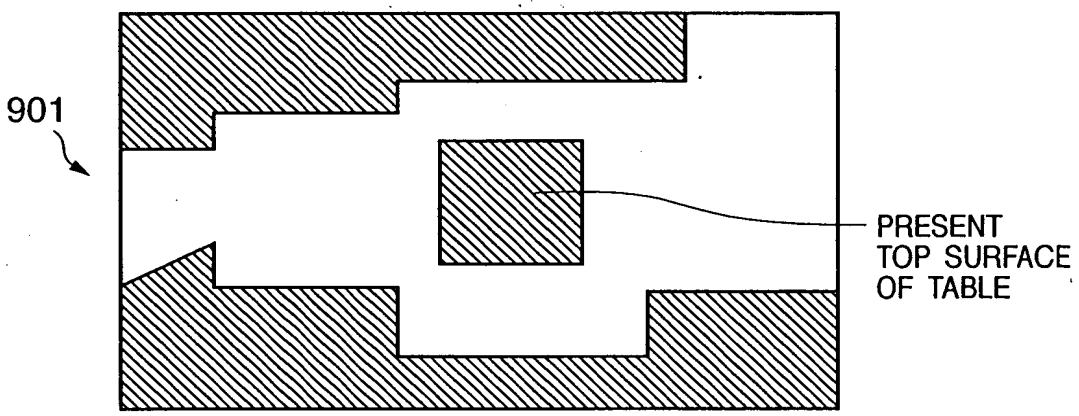

901
PRESENT
TOP SURFACE
OF TABLE

FIG. 9B

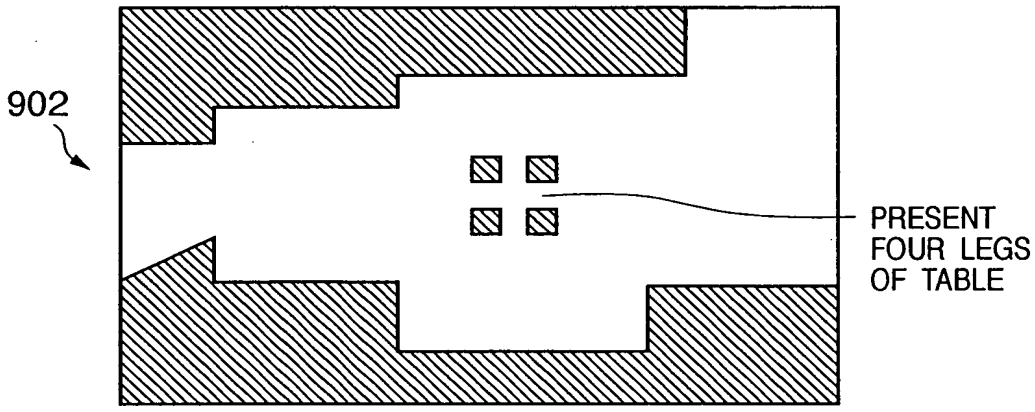

902
PRESENT
FOUR LEGS
OF TABLE

FIG. 10

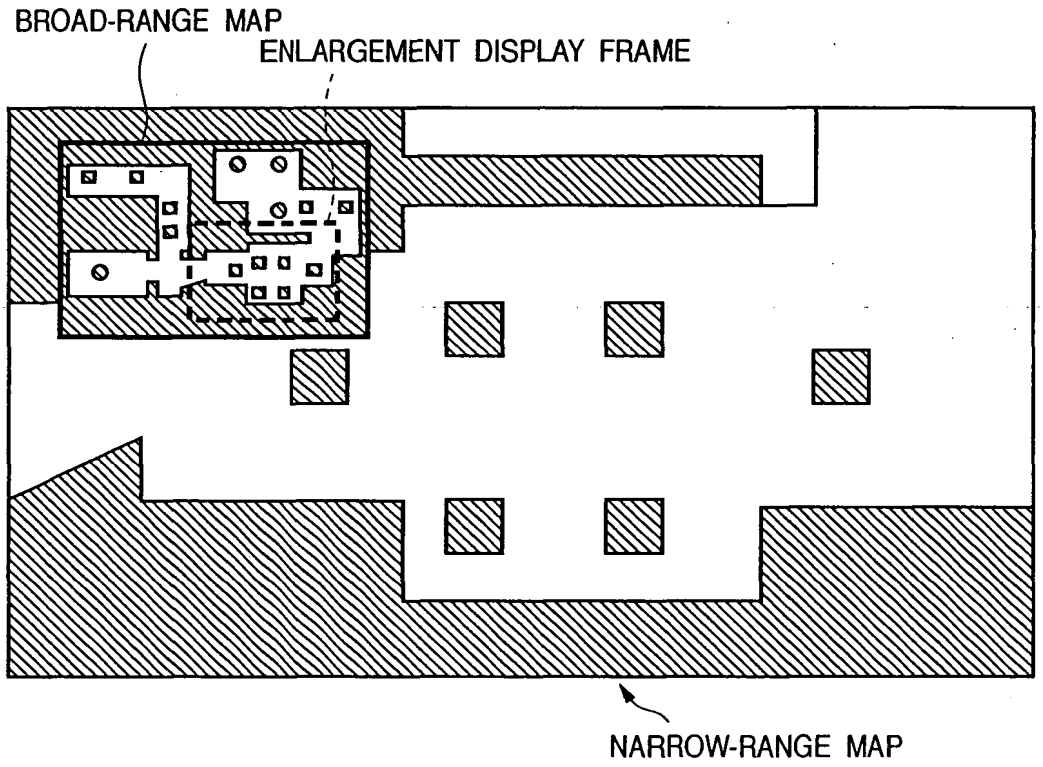

BROAD-RANGE MAP
ENLARGEMENT DISPLAY FRAME
NARROW-RANGE MAP

FIG. 11

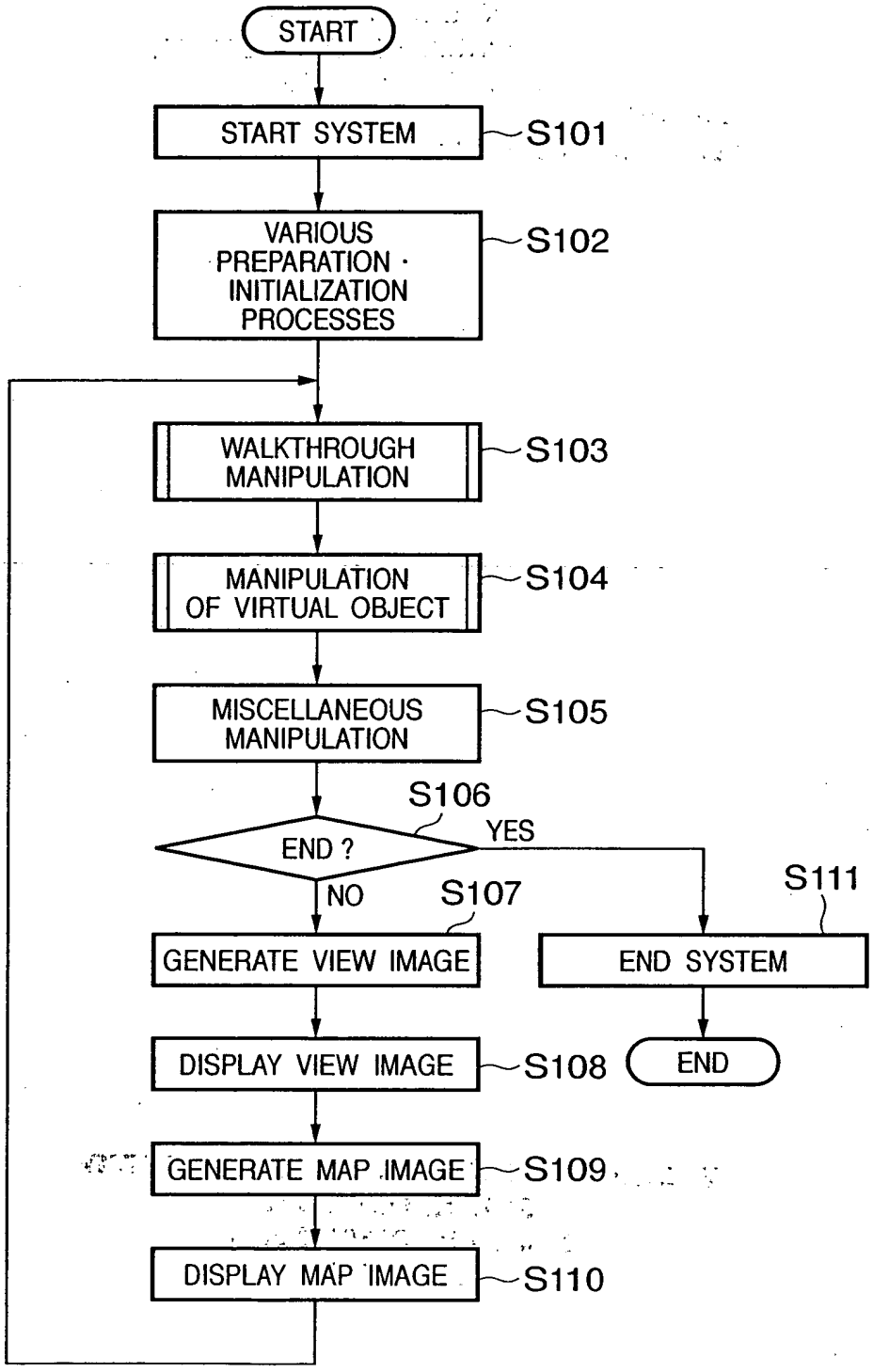

START
START SYSTEM
S101
VARIOUS PREPARATION · INITIALIZATION PROCESSES
S102
WALKTHROUGH MANIPULATION
S103
MANIPULATION OF VIRTUAL OBJECT
S104
MISCELLANEOUS MANIPULATION
S105
S106
END ?
YES
NO
S107
S111
GENERATE VIEW IMAGE
END SYSTEM
DISPLAY VIEW IMAGE
S108
END
GENERATE MAP IMAGE
S109
DISPLAY MAP IMAGE
S110

FIG. 12

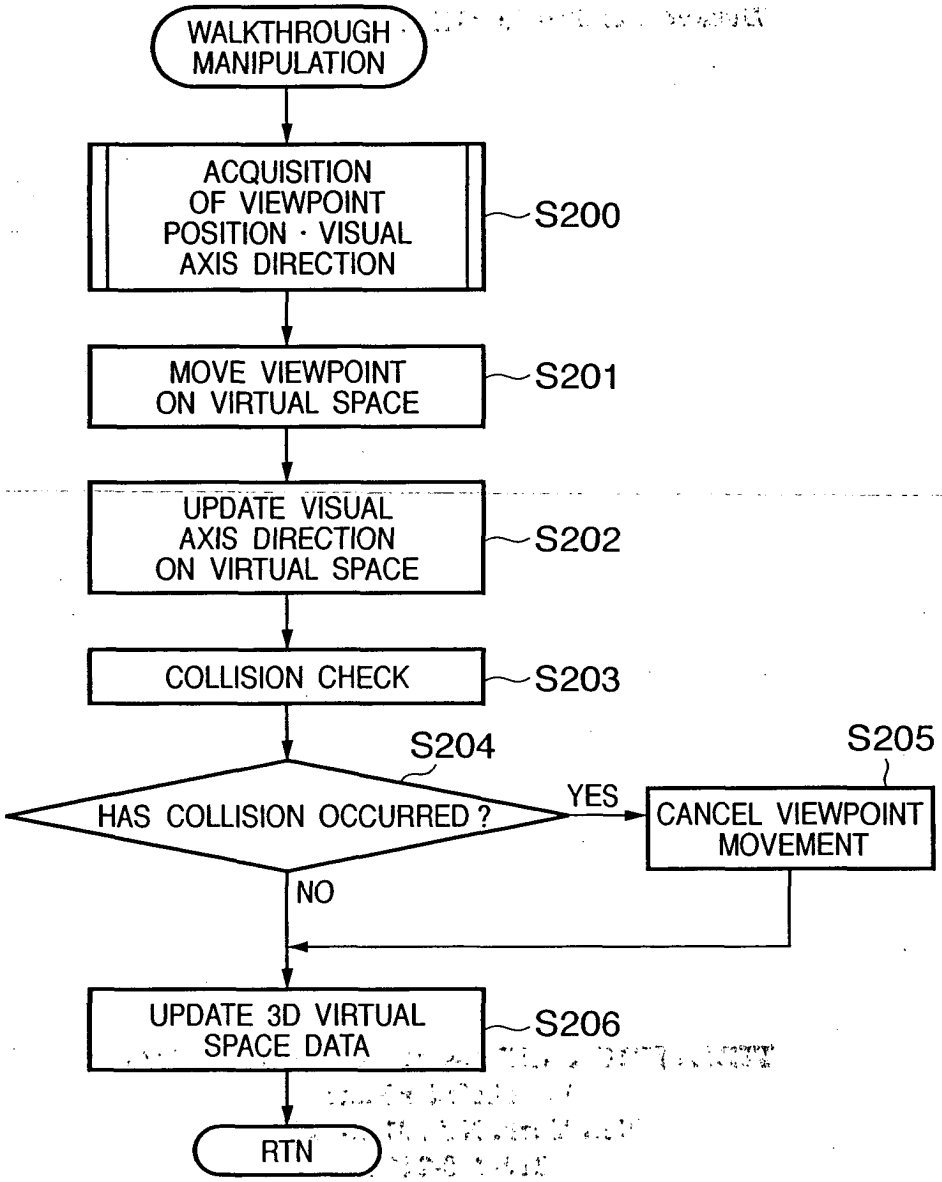

WALKTHROUGH MANIPULATION
ACQUISITION OF VIEWPOINT POSITION · VISUAL AXIS DIRECTION
S200
MOVE VIEWPOINT ON VIRTUAL SPACE
S201
UPDATE VISUAL AXIS DIRECTION ON VIRTUAL SPACE
S202
COLLISION CHECK
S203
S204
HAS COLLISION OCCURRED ?
YES
S205
CANCEL VIEWPOINT MOVEMENT
NO
UPDATE 3D VIRTUAL SPACE DATA
S206
RTN

FIG. 13

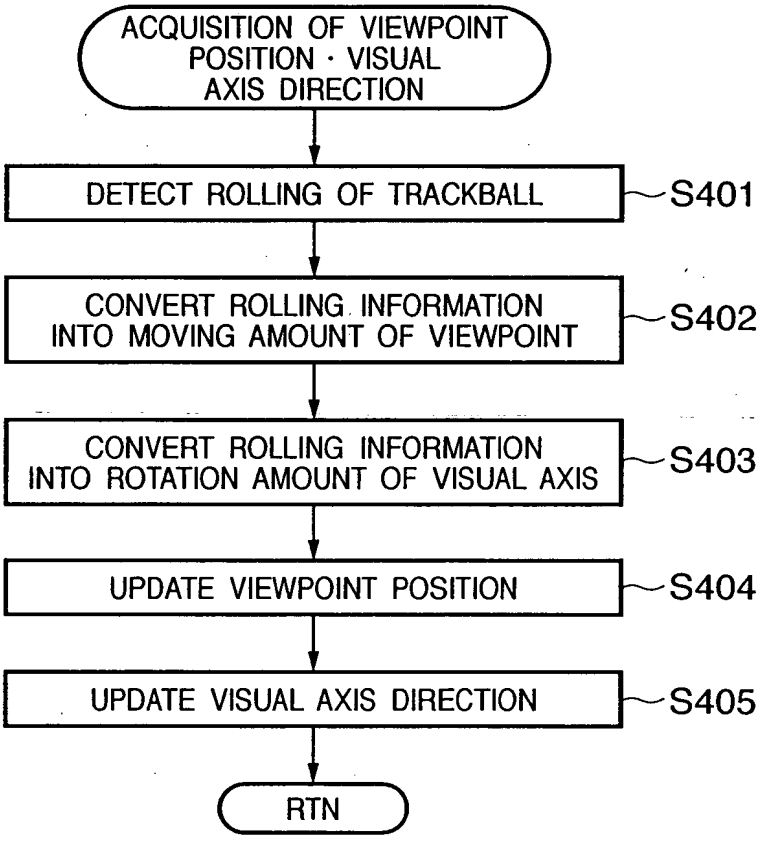

ACQUISITION OF VIEWPOINT POSITION · VISUAL AXIS DIRECTION
DETECT ROLLING OF TRACKBALL
S401
CONVERT ROLLING INFORMATION INTO MOVING AMOUNT OF VIEWPOINT
S402
CONVERT ROLLING INFORMATION INTO ROTATION AMOUNT OF VISUAL AXIS
S403
UPDATE VIEWPOINT POSITION
S404
UPDATE VISUAL AXIS DIRECTION
S405
RTN

FIG. 14

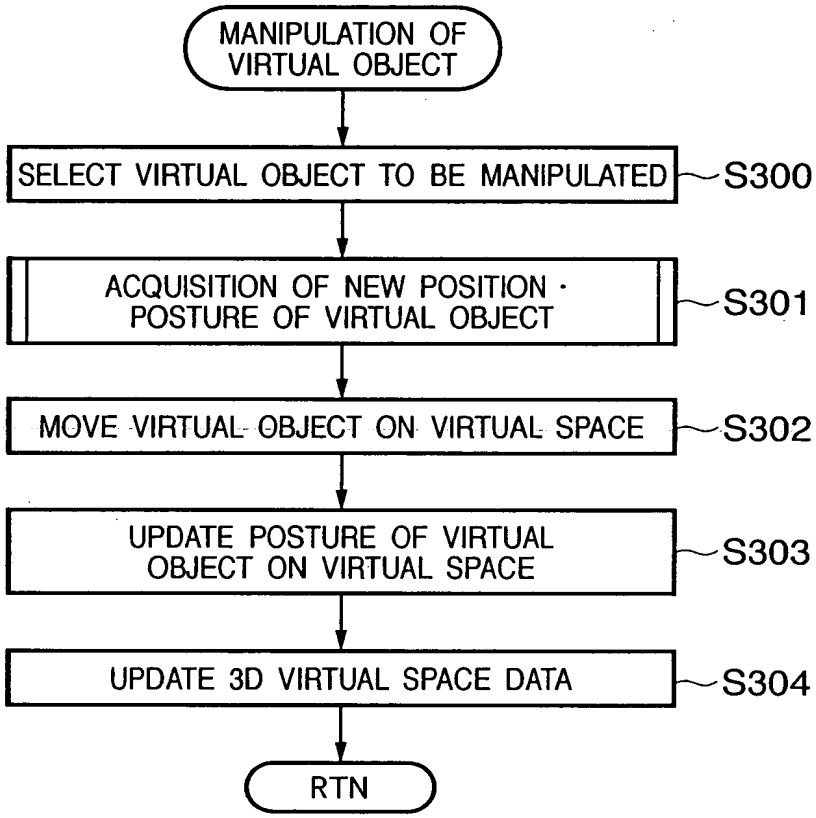

MANIPULATION OF VIRTUAL OBJECT
SELECT VIRTUAL OBJECT TO BE MANIPULATED
S300
ACQUISITION OF NEW POSITION · POSTURE OF VIRTUAL OBJECT
S301
MOVE VIRTUAL OBJECT ON VIRTUAL SPACE
S302
UPDATE POSTURE OF VIRTUAL OBJECT ON VIRTUAL SPACE
S303
UPDATE 3D VIRTUAL SPACE DATA
S304
RTN

FIG. 15

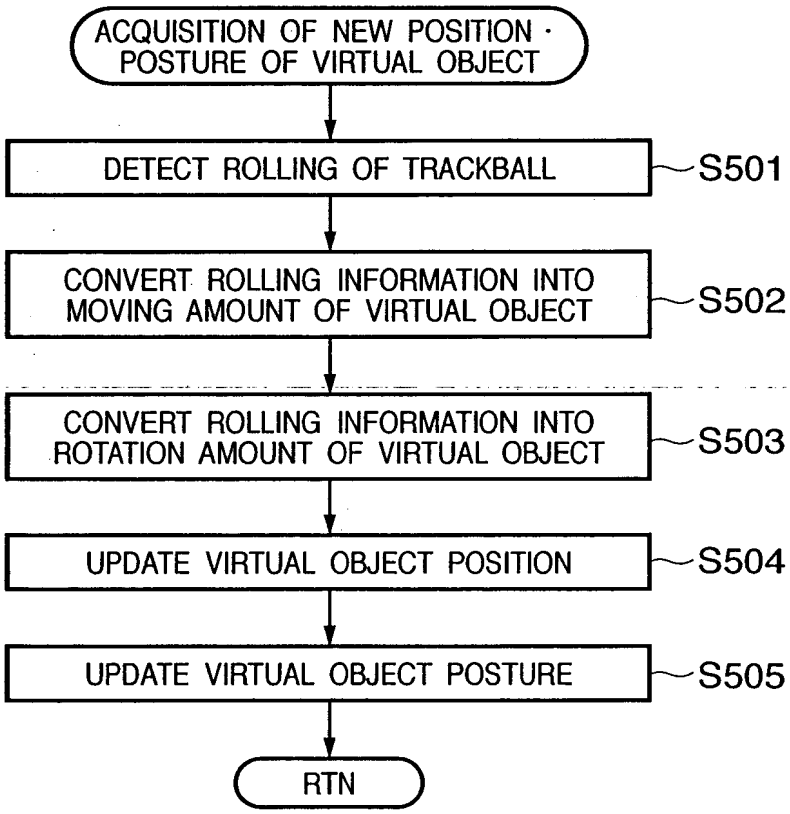

ACQUISITION OF NEW POSITION · POSTURE OF VIRTUAL OBJECT
DETECT ROLLING OF TRACKBALL
S501
CONVERT ROLLING INFORMATION INTO MOVING AMOUNT OF VIRTUAL OBJECT
S502
CONVERT ROLLING INFORMATION INTO ROTATION AMOUNT OF VIRTUAL OBJECT
S503
UPDATE VIRTUAL OBJECT POSITION
S504
UPDATE VIRTUAL OBJECT POSTURE
S505
RTN

FIG. 16

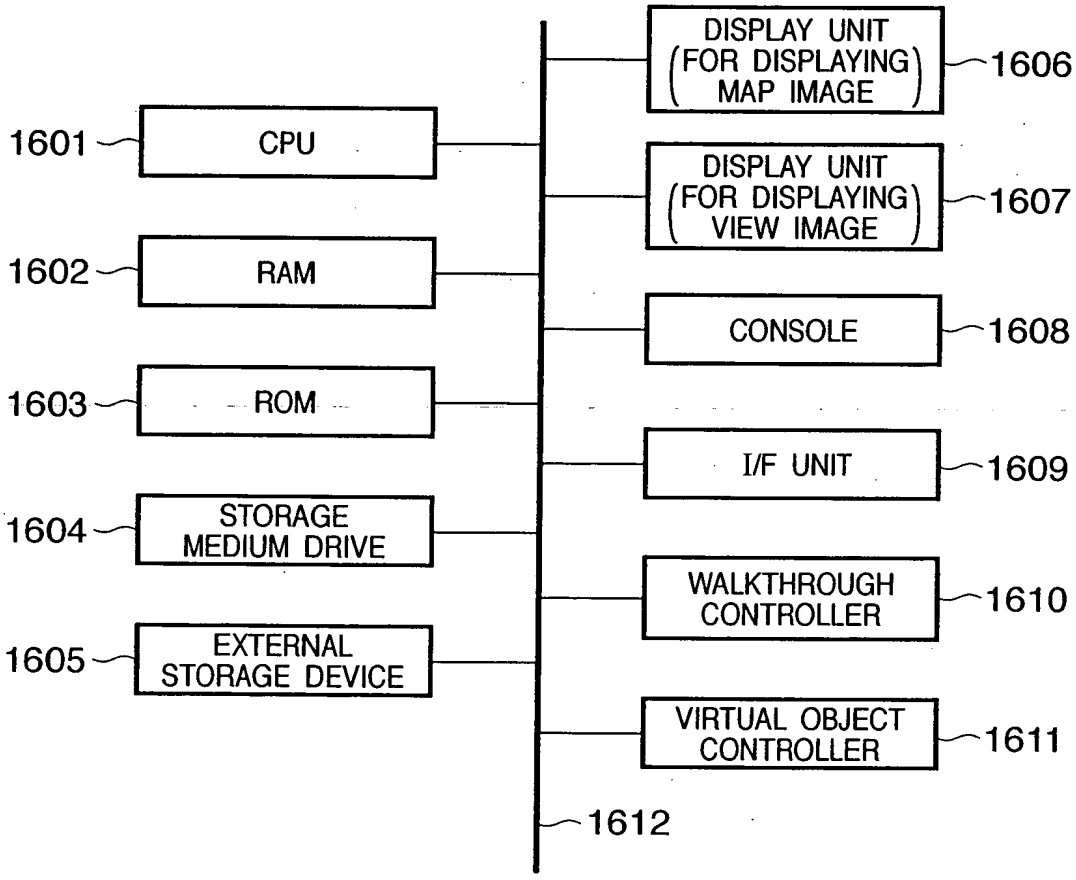

1601
CPU
1602
RAM
1603
ROM
1604
STORAGE MEDIUM DRIVE
1605
EXTERNAL STORAGE DEVICE
DISPLAY UNIT (FOR DISPLAYING MAP IMAGE)
1606
DISPLAY UNIT (FOR DISPLAYING VIEW IMAGE)
1607
CONSOLE
1608
I/F UNIT
1609
WALKTHROUGH CONTROLLER
1610
VIRTUAL OBJECT CONTROLLER
1611
1612

FIG. 17

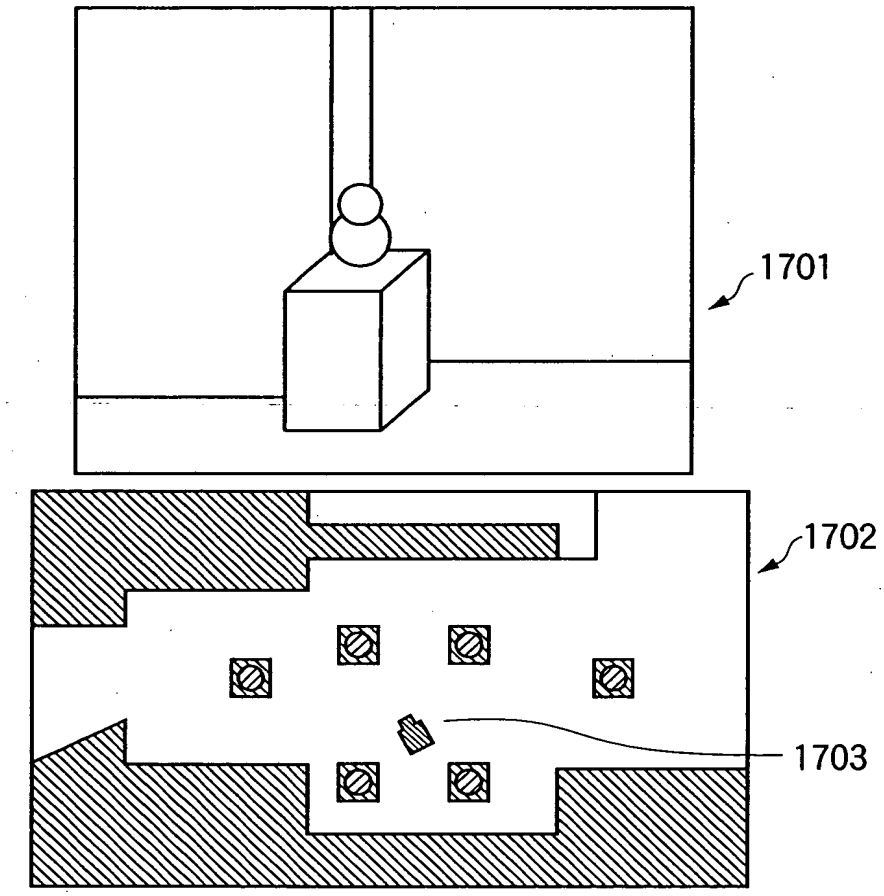


FIG. 18

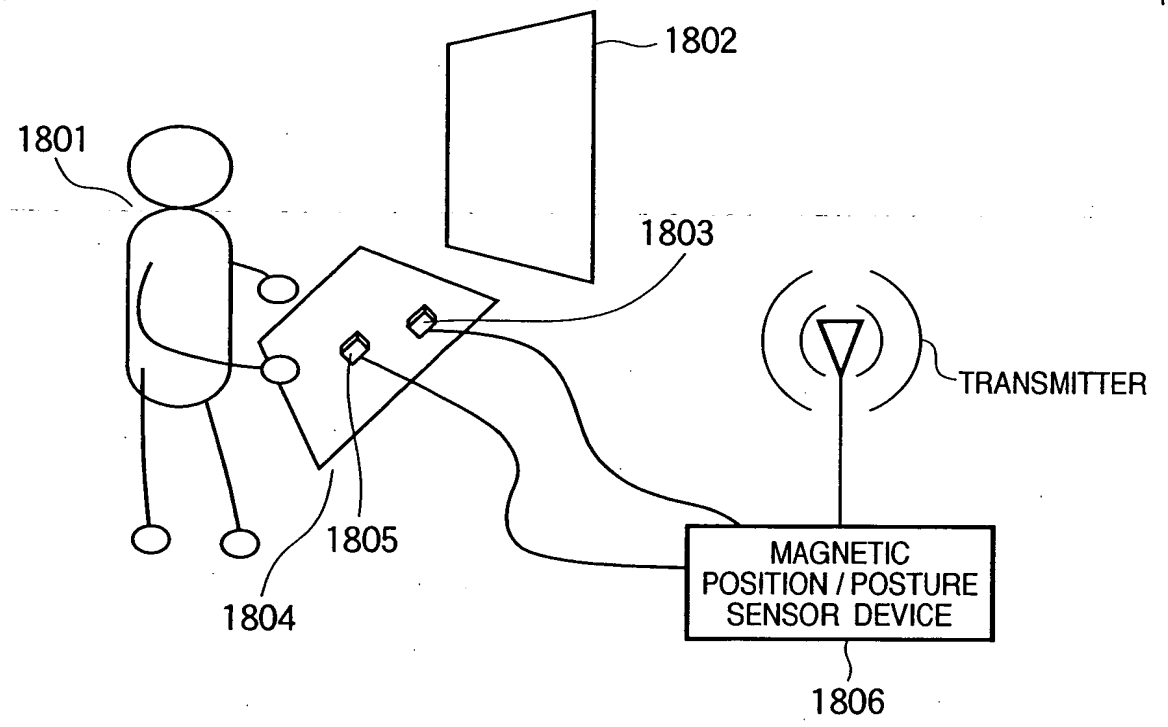

1802
1801
1803
TRANSMITTER
1805
1804
MAGNETIC
POSITION / POSTURE
SENSOR DEVICE
1806

FIG. 19

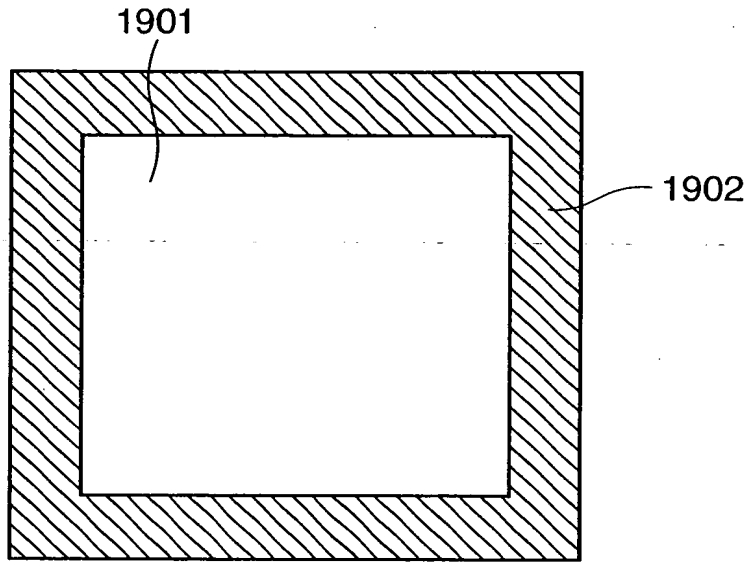


FIG. 20

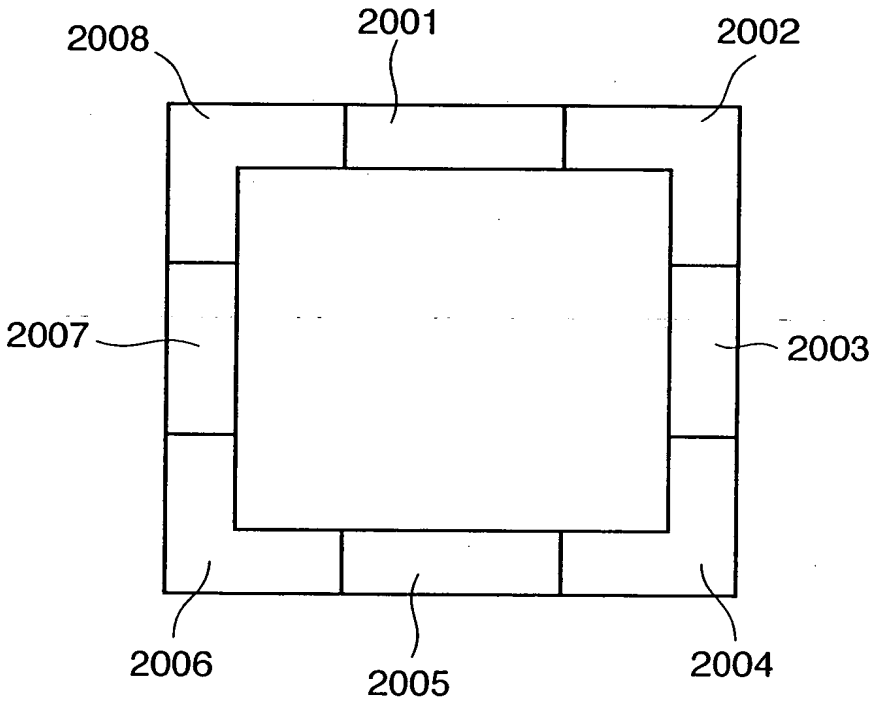


FIG. 21

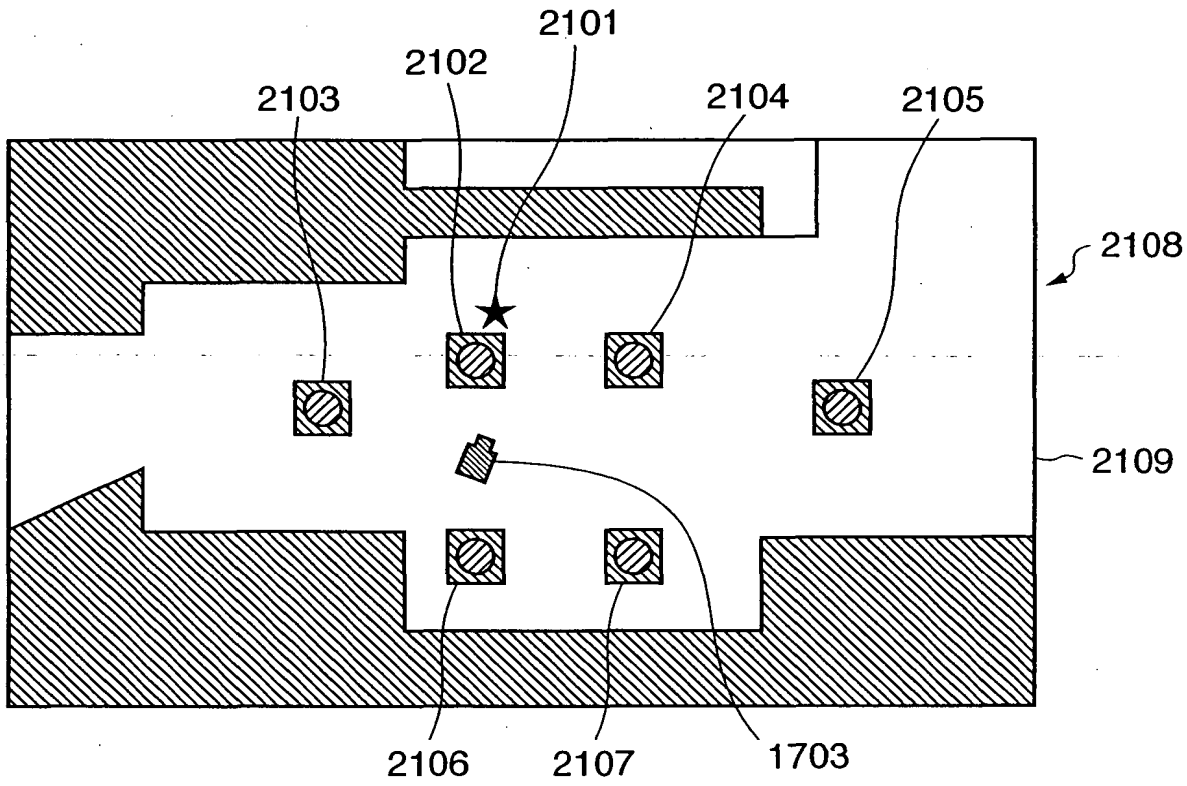


FIG. 22

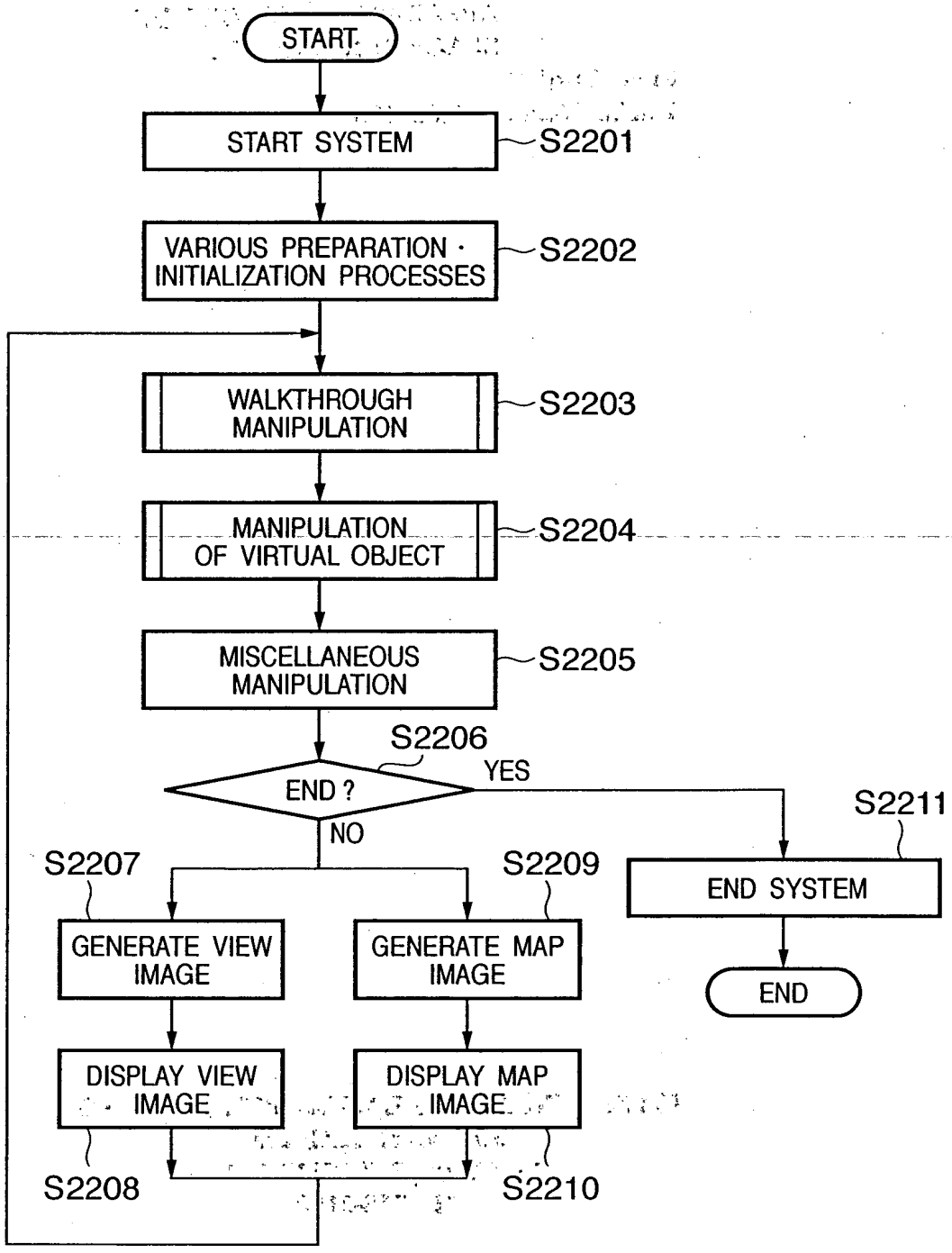

START
START SYSTEM
S2201
VARIOUS PREPARATION · INITIALIZATION PROCESSES
S2202
WALKTHROUGH MANIPULATION
S2203
MANIPULATION OF VIRTUAL OBJECT
S2204
MISCELLANEOUS MANIPULATION
S2205
S2206
END ?
YES
NO
S2211
END SYSTEM
END
S2207
GENERATE VIEW IMAGE
S2209
GENERATE MAP IMAGE
DISPLAY VIEW IMAGE
DISPLAY MAP IMAGE
S2208
S2210

FIG. 23

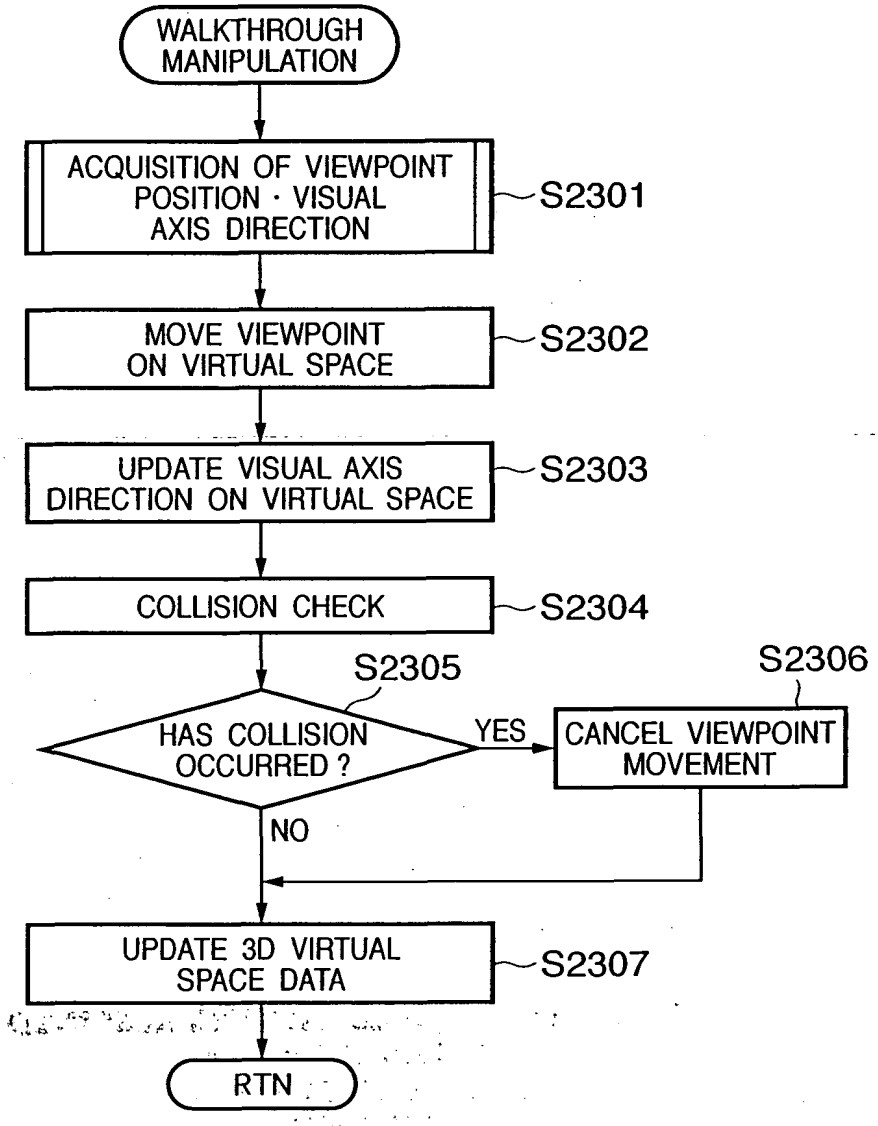
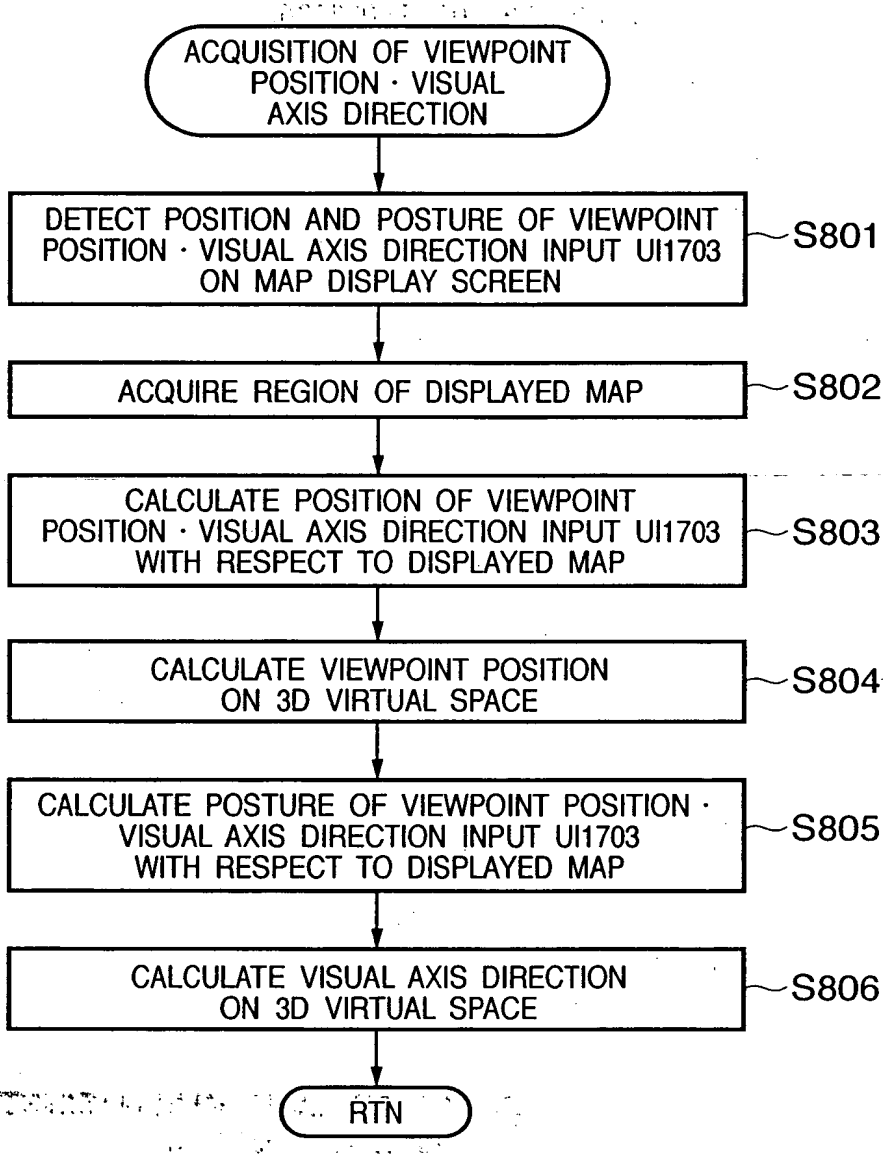

WALKTHROUGH MANIPULATION
ACQUISITION OF VIEWPOINT POSITION · VISUAL AXIS DIRECTION
S2301
MOVE VIEWPOINT ON VIRTUAL SPACE
S2302
UPDATE VISUAL AXIS DIRECTION ON VIRTUAL SPACE
S2303
COLLISION CHECK
S2304
S2305
HAS COLLISION OCCURRED ?
YES
S2306
CANCEL VIEWPOINT MOVEMENT
NO
UPDATE 3D VIRTUAL SPACE DATA
S2307
RTN

FIG. 24


ACQUISITION OF VIEWPOINT POSITION · VISUAL AXIS DIRECTION
DETECT POSITION AND POSTURE OF VIEWPOINT POSITION · VISUAL AXIS DIRECTION INPUT UI1703 ON MAP DISPLAY SCREEN
S801
ACQUIRE REGION OF DISPLAYED MAP
S802
CALCULATE POSITION OF VIEWPOINT POSITION · VISUAL AXIS DIRECTION INPUT UI1703 WITH RESPECT TO DISPLAYED MAP
S803
CALCULATE VIEWPOINT POSITION ON 3D VIRTUAL SPACE
S804
CALCULATE POSTURE OF VIEWPOINT POSITION · VISUAL AXIS DIRECTION INPUT UI1703 WITH RESPECT TO DISPLAYED MAP
S805
CALCULATE VISUAL AXIS DIRECTION ON 3D VIRTUAL SPACE
S806
RTN